

IN THE CLAIMS

1-18 (canceled)

19. (new) An antibody which specifically binds to an epitope defined by at least a ten amino acid sequence from human DNA-PKcs, said sequence comprising a phosphorylated threonine at position T2609, wherein said antibody does not bind when T2609 is not phosphorylated.

20. (new) The antibody of claim 19, wherein said antibody is a monoclonal antibody.

21. (new) The antibody of claim 20, wherein said monoclonal antibody is a human monoclonal antibody.

22. (new) The antibody of claim 19, wherein said antibody is pT2609mAb.

23. (new) An antibody which specifically binds to an epitope defined by at least a ten amino acid sequence from human DNA-PKcs, said sequence comprising a phosphorylated serine at position S2056, wherein said antibody does not bind when S2056 is not phosphorylated.

24. (new) The antibody of claim 23, wherein said antibody is a monoclonal antibody.

25. (new) The antibody of claim 24, wherein said monoclonal antibody is a human monoclonal antibody.

26. (new) The antibody of claim 23, wherein said antibody is pS2056mAb.

27. (new) A method for determining the ability of a test compound to block phosphorylation of human DNA-PKcs, comprising providing a sample containing a DNA-PKcs peptide fragment capable of being phosphorylated, combining said test compound with said sample, inducing phosphorylation of the DNA-PKcs peptide fragment, and measuring the resulting phosphorylation of said DNA-PKcs peptide fragment at T2609 and/or S2056 in the presence of the test compound.

28. (new) The method of claim 27, wherein said measuring step is carried out by measuring the binding of an antibody which specifically binds to an epitope comprising either or both of (a) a phosphorylated serine at position S2056 in human DNA-PKcs or (b) a phosphorylated threonine at position T2609 in human DNA-PKcs.

29. (new) The method of claim 27, wherein said DNA-PKcs peptide fragment is an isolated peptide having less than 1000 amino acids, and comprising: SEQ ID NO: 4, SEQ ID NO: 5, or sequences having at least 90% homology thereto.

30. (new) The method of claim 28, wherein said DNA-PKcs peptide fragment is an isolated peptide having less than 1000 amino acids, and comprising: SEQ ID NO: 4, SEQ ID NO: 5, or sequences having at least 90% homology thereto.

31. (new) The method of claim 27, wherein said DNA-PKcs peptide fragment is selected from the group consisting of SEQ ID NO: 4, SEQ ID NO: 5, SEQ ID NO: 6, SEQ ID NO: 7, SEQ ID NO: 8, SEQ ID NO: 9, SEQ ID NO: 10, SEQ ID NO: 11, SEQ ID NO: 12, SEQ ID NO: 13 and SEQ ID NO: 14.

32. (new) The method of claim 28, wherein said DNA-PKcs peptide fragment is selected from the group consisting of SEQ ID NO: 4, SEQ ID NO: 5, SEQ ID NO: 6, SEQ ID NO: 7, SEQ ID NO: 8, SEQ ID NO: 9, SEQ ID NO: 10, SEQ ID NO: 11, SEQ ID NO: 12, SEQ ID NO: 13 and SEQ ID NO: 14.

33. (new) The method of claim 27 wherein said test compound is selected from the group consisting of wortmannin, substituted or unsubstituted imidazoles, substituted or unsubstituted pyrazoles, substituted or unsubstituted fluoranthenes, substituted or unsubstituted thiazoles, substituted or unsubstituted quinolinones, substituted or unsubstituted phthalazinones, and derivatives thereof.

34. (new) The method of claim 28 wherein said test compound is selected from the group consisting of wortmannin, substituted or unsubstituted imidazoles, substituted or unsubstituted

pyrazoles, substituted or unsubstituted fluoranthenes, substituted or unsubstituted thiazoles, substituted or unsubstituted quinolinones, substituted or unsubstituted phthalazinones, and derivatives thereof.

35. (new) An isolated peptide having less than 1000 amino acids, comprising SEQ ID NO: 4, SEQ ID NO: 5, or sequences having at least 90% homology thereto.

36. (new) The isolated peptide of claim 35, wherein T2609 and/or S2056 are replaced by an amino acid selected from the group consisting of: Valine, Alanine, Glycine, and Leucine.

37. (new) An isolated polynucleotide encoding the peptide of claim 35.

38. (new) An isolated polynucleotide encoding the peptide of claim 36.

39. (new) The isolated polynucleotide of claim 37, having a sequence selected from the group consisting of SEQ ID NO: 16, SEQ ID NO: 17, SEQ ID NO: 18, SEQ ID NO: 19, SEQ ID NO: 20, SEQ ID NO: 21, SEQ ID NO: 22, SEQ ID NO: 23, SEQ ID NO: 24, SEQ ID NO: 25, and SEQ ID NO: 26.

40. (new) The isolated polynucleotide of claim 38, having a sequence selected from the group consisting of SEQ ID NO: 16, SEQ ID NO: 17, SEQ ID NO: 18, SEQ ID NO: 19, SEQ ID NO: 20, SEQ ID NO: 21, SEQ ID NO: 22, SEQ ID NO: 23, SEQ ID NO: 24, SEQ ID NO: 25, and SEQ ID NO: 26.

41. (new) A method of measuring radiosensitivity of cells in a subject, comprising (a) providing a cell sample from said subject, said sample containing subject's DNA-PKcs, (b) combining said sample with a labelled antibody which binds to phosphorylated residue T2609 or phosphorylated residue S2056 but not the unphosphorylated residues, (c) removing any unbound antibody from the sample, and (d) measuring the degree of phosphorylation of the DNA-PKcs by determining the extent of binding of the antibody to the DNA-PKcs, whereby the degree of antibody binding to DNA-PKcs correlates to the degree of phosphorylation, a higher degree of phosphorylation indicating less radiation sensitivity.